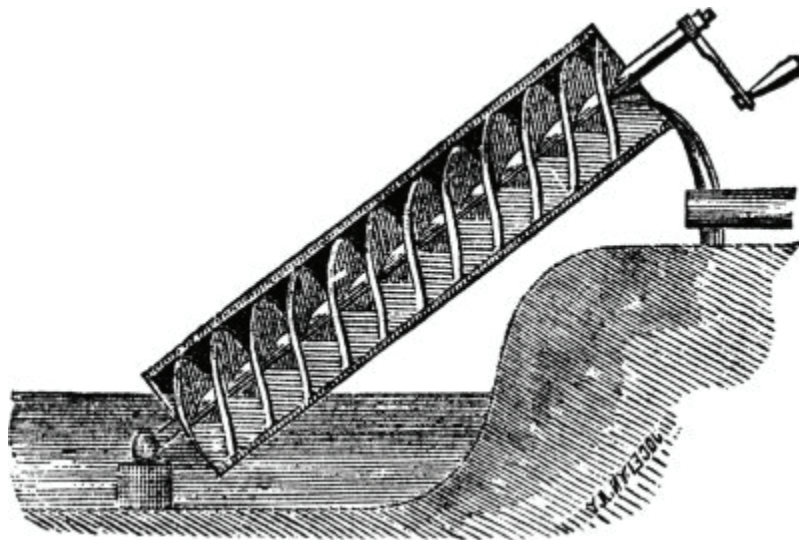


Stop Press I

Scientists have discovered a new state of matter in one dimensions. It may be mentioned that B G Sidharth had pointed this out as early as 1995, that is he had anticipated nanotubes or one dimensional structures and had also investigated some of their properties. Further he had got built on a large scale the Archimedes Screw which was used to lift up water but now in this case it is being used not for sending water to higher levels but rather sending electrons to higher energy levels to create a new matter.

The Greek mathematician Archimedes came across an invention while traveling through ancient Egypt which came to be associated with his name. It was a machine consisting of a screw housed inside a hollow tube that trapped and drew water upon rotation. Researchers led by Stanford University physicist Benjamin Lev have now developed a quantum version of Archimedes' screw that, instead of water, hauls fragile collections of gas atoms to higher and higher energy states without collapsing. Their discovery is detailed in a paper published in *Science, January 14, 2021*.



Experimental physicists have made a unique, one-dimensional quantum gas system that remains unusually stable as it is pumped up to higher energy states. The researchers compare it to water being transported up an Archimedes' screw.

Sidharth in his 1995 paper [*Journal of Statistical Physics*, 95, (3/4), pp.775—

784] had in fact explored the one (and two) dimensional cases in detail and their very peculiar properties and examined many of the exotic properties of both these cases including the nanotubes.